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# SCIENCE

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FRIDAY, OCTOBER 16, 1903.

THE ISODYNAMIC REPLACEMENT OF  
NUTRIENTS.

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MSS: intended for publication and books, etc., intended  
for review should be sent to the responsible editor, Pro-  
fessor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

THIS term was introduced into physi-  
ology by Rubner about 1885 as a concise ex-  
pression of the results of his experiments  
upon the relative values in nutrition of the  
three great classes of nutrients, the pro-  
teids, carbohydrates and fats.

It was already well established by the  
labors of previous investigators, notably of  
Pettenkofer and Voit in Munich, that, aside  
from a certain rather small amount of pro-  
teids which is indispensable, the animal  
body possesses a remarkable degree of flex-  
ibility as regards the nature of the material  
which it can use to support its vital proc-  
esses. Aside from the necessary minimum  
of proteids, the metabolic activities of the  
body may be supported, now at the ex-  
pense of the stored body fat, now by the  
body proteids, and again by the proteids,  
the fats or the carbohydrates of the food.  
Whatever may be true economically, phys-  
iologically the welfare of the mature ani-  
mal is not conditioned upon any fixed rela-  
tion between the classes of nutrients in its  
food supply, apart from the minimum re-  
quirement for proteids. The problem  
which Rubner proposed to himself was to  
determine the relative quantities of the  
several nutrients which were equivalent to  
each other in the vital processes of the ani-